



Parent's Knowledge, Attitude and Practice on Prevention of Early Childhood Caries in Al Jouf Province, Saudi Arabia

Ravi Kumar G¹, Kiran Kumar Ganji², Santosh Patil³, Ahmed Alhadi⁴, Mohammed Alhadi⁴

¹Assistant Professor, Pediatric Dentistry, College of Dentistry, Al Jouf University, Sakaka, Kingdom of Saudi Arabia.

²Assistant Professor, Periodontics, College of Dentistry, Al Jouf University, Sakaka, Kingdom of Saudi Arabia.

³Assistant Professor, Oral medicine & Radiology, College of Dentistry, Al Jouf University, Sakaka, Kingdom of Saudi Arabia.

⁴General Dentist, College of Dentistry, Al Jouf University, Sakaka, Kingdom of Saudi Arabia.

Author to whom correspondence should be addressed: Dr. Ravi Kumar G, Assistant Professor, Pediatric Dentistry, College of Dentistry, Al Jouf University, Sakaka, KSA. Phone: +966540684272. E-mail: dr.ravi.gudianeni@judent.org.

Academic Editors: Alessandro Leite Cavalcanti and Wilton Wilney Nascimento Padilha

Received: 18 October 2017 / Accepted: 29 December 2017 / Published: 04 January 2018

Abstract

Objective: To measure the knowledge, attitude, and preventive practices of parents in regards to their understanding of early childhood caries (ECC) in Al Jof province, Saudi Arabia (KSA). **Material and Methods:** A cross-sectional oral health survey was conducted among 228 parents, who were selected by stratified cluster sampling. A questionnaire consisting of 10 questions in each domain addressing knowledge, attitude, and preventive practice for ECC was applied. Scoring in the knowledge field included Yes/No/Don't know, while the attitude and practice domains used a 5-point Likert scale. **Results:** The mean values for knowledge of the respondents was 'Yes' (106.1 \pm 46.12), 'No' (63.5 \pm 50.95), and 'Don't know' (58.4 \pm 23.21); the p-value was $p > 0.05$. The mean values for attitudes of the parents were strongly disagree (49.8 \pm 33.51), disagree (28 \pm 15.63), cannot say (47.4 \pm 20.33), agree (69.4 \pm 26.57), and strongly agree (33.4 \pm 30.48); the p-value was $p < 0.05$. The mean values for preventive practices were strongly disagree (23.3 \pm 25.15), disagree (27.6 \pm 28.29), cannot say (38.9 \pm 31.8), agree (84.9 \pm 28.07), and strongly agree (53.3 \pm 38.73); the p-value was $p < 0.05$. **Conclusion:** The parents did not have adequate knowledge of ECC but did have a good attitude and practice towards its prevention.

Keywords: Knowledge; Attitude; Primary Prevention; Dental Caries.

Introduction

Early childhood caries (ECC) is defined as the presence of one or more decayed, missing, or filled tooth surface in any primary tooth in a child aged 71 months or younger [1]. The prevalence of ECC has been reported to range from 6-90% [2]. Owing to the high prevalence of ECC and its influence on quality of life, it has been recognized as a serious community health problem [3].

Socioeconomic, socio-cultural, and socio-behavioral factors are believed to influence specific risk factors for ECC [4,5]. Examples include dietary and feeding practices, oral hygiene, and regular dental attendance. Little is known about the oral health knowledge of parents in Saudi Arabia. It has been reported that the dental health status of children is affected by their dietary habits, the socioeconomic class, and maternal education [6-9].

Some authors reported a low prevalence of caries in the children of parents with a high level of education and superior socioeconomic status [10]. Factors such as a low level of education in the parents, unemployment, and low income are associated with poor health and chronic disease [11]. Parents are decision-makers in matters of children's healthcare. Parents/caregivers play a major role in a child's life, so their knowledge, attitude, and preventive practices have a great influence on the child's oral health. The parents' knowledge of oral health is an important contributing factor to the overall health of the child [12]. Many studies have concluded that parents are in definite need of advice on feeding and oral hygiene practices [13]. Prevention is the key for ECC and can be achieved through the presence of knowledgeable and efficacious caregivers [14].

It is essential to explore the knowledge, attitude, and preventive practice of parents/caregivers as it affects children's dental care and the prevention of ECC. So the present study has been undertaken to assess the knowledge, attitude, and preventive practices of parents the Al Jouf region in Saudi Arabia in regards to the prevention of ECC.

Material and Methods

Study Population

A cross-sectional oral health survey was conducted among 228 parents in the Al Jouf province of Saudi Arabia who were selected through stratified cluster sampling. The study has been conducted from October 2106 to January 2107. The study population consisted of Saudi parents who had children between 6 months to 5 years of age.

Sample size was calculated based on knowledge of ECC among parents in pilot study, a total of 198 subjects will be sufficient to detect statistically significant difference of 5% with 95% confidence interval and 80% power using chi square test and considering design effect of two and expecting 20% non-participation, so sample size was increased to 238.

Al Jouf province divided into three regions for administrative purpose i.e Sakaka, Qurayyat and Dumat Al Jandal. Sample for each region was decided by proportionately – Sakakah (n = 95; 40%), Qurayyat (n = 70; 29.4%) and Dumat Al-Jandal (n = 73; 30.6%). From each region one cluster

has been selected and required sample from each cluster was selected by systematic random sampling until the desired sample size is achieved.

Data Collection

A close-ended questionnaire consisting of 30 questions was administered to the parents. There were three domains with 10 questions each addressing knowledge, attitude, and preventive practices regarding ECC.

All aspects of ECC including oral development, diet, nursing habits, oral hygiene, fluoride, transmissibility of oral bacteria, importance of primary teeth, and the attitude towards acquiring new knowledge were addressed in the questionnaire. The scoring criteria in the knowledge domain included Yes/No/Don't know whereas the attitude and practice domains used a 5-point Likert scale. A section for socio-demographic data was also included in the questionnaire to assess the socioeconomic status, education level, and gender of the study population.

The questionnaire was prepared in English and later translated into the Arabic language and tested for psychometric analysis. Questionnaire was pilot tested with Cronbach's α ($\alpha = 0.82$).

Statistical Analysis

Data were analyzed using SPSS (version 21.0) (SPSS Inc., Chicago, Ill). An analysis of variance (ANOVA) test was performed to determine significance level in the knowledge, attitude, and preventive practices among the study population. Significance level was set at 5%.

Ethical Aspects

Ethical clearance for this study was obtained from the Ethics Committee of the College of Dentistry, Al Jouf University, Kingdom of Saudi Arabia (JU_IRB_2016_36). All the procedures were followed according to Helsinki declarations.

Results

A data from 228 (mean 30 years, SD ± 2.25) parents were analyzed for final results. Among 238 only 10 parents refused to participate in the current study. The demographic data of the study population is presented in Table 1. The majority of the respondents were men (72%), 47% had a secondary education and 9% in the higher income groups.

Table 1. Socio demographic data of the study population.

Variables		N	%
Gender	Male	165	72.0
	Female	63	28.0
Education Level	Primary	34	15.0
	Secondary	107	47.0
	Higher	87	38.0
Socio Economic Status	Low	30	13.0
	Medium	178	78.0
	Higher	20	9.0

Table 2 shows the response rate of parents regarding knowledge of ECC. Mean values of the parents' knowledge are shown in Table 3. The mean number of 'Yes' answers was 106.1 (± 46.12), the mean number of 'No' answers was 63.5 (± 50.95), and the mean number of 'Don't know' answers was 58.4 (± 23.21). The level of significance was set at $p > 0.05$.

Table 2. Response rate of parents towards knowledge on ECC.

Questions	Yes		No		Don't Know	
	n	%	n	%	n	%
Does mother's diet during pregnancy affect development of baby's teeth?	134	59.0	35	15.0	59	26.0
Is it advisable to breast feed the infant before sleeping	125	55.0	47	21.0	56	25.0
Night-time bottle feeding directly affect child's teeth?	89	39.0	39	17.0	100	44.0
Does Bottle feeding affect the child's teeth?	116	51.0	41	18.0	71	31.0
Does a child require for dental check up even if no dental problems exist?	110	48.0	60	26.0	58	25.0
Should the baby drink milk with a cup when he/she gets old enough to hold it?	48	21.0	147	64.0	33	14.0
Is sweetened juice recommended to be given frequently to a child?	22	10.0	168	74.0	38	17.0
Does fluoride toothpaste help to prevent the tooth decay?	105	46.0	47	21.0	76	33.0
Do you think that control candies/sweets of children will be helpful in the prevention of tooth decay?	189	83.0	18	8.0	21	9.0
I Knew how much tooth paste should be used for children's brushing	123	54.0	33	14.0	72	32.0

Table 3. Mean values in knowledge domain.

Knowledge	Mean \pm SD	p-value
Yes	106.10 \pm 46.12	0.032
No	63.51 \pm 50.95	
Don't know	58.42 \pm 23.21	

*Significant difference ($p > 0.05$)

Table 4 shows the response rate of parents regarding their attitude towards ECC. The mean values of the attitudes of the parents are shown in Table 5. These included: strongly disagree 49.8 (± 33.51), disagree 28 (± 15.63), cannot say 47.4 (± 20.33), agree 69.4 (± 26.57), and strongly agree 33.4 (± 30.48).

Table 4. Response rate of parents towards their attitude on ECC.

Questions	Strongly Disagree		Disagree		Cannot say/uncertain		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
You should visit dentist once in 6 months.	4	2.0	16	7.0	38	17.0	93	41.0	77	34.0
Effective cleaning of teeth can be achieved by the child him/herself.	93	41.0	65	29.0	30	13.0	32	14.0	8	4.0
Maintaining oral health of child is parent's duty.	11	5.0	17	7.0	9	4.0	97	43.0	94	41.0
Night time bottle/breast feeding can cause tooth decay.	103	45.0	18	8.0	65	29.0	39	17.0	3	1.0
A child's teeth should be cleaned/ brushed as soon as the teeth erupt.	27	12.0	20	9.0	60	26.0	84	37.0	37	16.0
Do you think that is it necessary to take your baby for a dental check up after the teeth erupt?	44	19.0	20	9.0	63	28.0	84	37.0	17	7.0
Milk teeth needs dental care as permanent teeth	25	11.0	23	10.0	27	12.0	107	47.0	46	20.0
It is not necessary to do fillings in baby's teeth.	70	31.0	42	18.0	51	22.0	48	21.0	17	7.0
It is important for a child to visit the dentist before 1 years old.	59	26.0	37	16.0	60	26.0	56	25.0	16	7.0
Tooth decay is caused by bacteria that are transmitted by sharing feeding utensils (e.g.: spoon).	62	27.0	22	10.0	71	31.0	54	24.0	19	8.0

Table 5. Mean values in attitude and practice domain.

	Attitude Mean± SD	Practice Mean± SD
Strongly disagree	49.81±33.51	23.32±25.15
Disagree	28.00±15.63	27.63±28.29
Cannot say	47.42±20.33	38.94±31.8
Agree	69.43 ±26.57	84.92 ±28.07
Strongly agree	33.42 ±30.48	53.32 ±38.73
p-value	0.0009*	0.0003*

*Significant difference (p>0.05)

Table 6 shows the response rate of parents regarding oral health practices in the prevention of ECC. The mean values for the preventive practices of parents are shown in Table 5. The mean values of the practices include: strongly disagree = 23.3 (± 25.15), disagree = 27.6 (± 28.29), cannot say = 38.9 (± 31.8), agree = 84.9 (± 28.07), and strongly agree = 53.3 (± 38.73). The level of significance was set at $p < 0.05$.

Table 6. Response rate of parents towards oral health practices in the prevention of ECC.

Questions	Strongly Disagree		Disagree		Cannot say/uncertain		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
Is it advisable to have sugary snacks more frequently ?	51	22.0	108	47.0	19	8.0	38	17.0	12	5.0
The parents should make effort to improve their dental health knowledge?	4	2.0	20	9.0	11	5.0	107	47.0	86	38.0
The dental health education for children should be taught in schools ?	5	2.0	15	7.0	13	6.0	75	33.0	120	53.0
A balance diet is essential for the healthy growth of a baby's teeth?	2	1.0	18	8.0	9	4.0	100	44.0	99	43.0
Is it advisable to brush the teeth after every meal?	22	10.0	21	9.0	23	10.0	96	42.0	66	29.0
Bacteria that cause decay can spread from mother to child?	82	36.0	19	8.0	72	32.0	41	18.0	14	6.0
Bottle feeding after child is 1-year-old is bad for his/her teeth?	26	11.0	20	9.0	74	32.0	79	35.0	29	13.0
Fluoride toothpaste should not be given to children younger than three years?	18	8.0	18	8.0	86	38.0	82	36.0	24	11.0
Brushing the children teeth should be done by parents?	13	6.0	18	8.0	13	6.0	123	54.0	61	27.0
First signs of tooth decay are white lines or spots on the tooth surfaces?	10	4.0	19	8.0	69	30.0	108	47.0	22	10.0

Discussion

The present study aimed to understand the level of knowledge, attitude, and preventive practices regarding ECC among parents in the Al Jouf region of Saudi Arabia.

Maternal attitude towards oral health was significantly correlated with the oral health of their children [15,16]. The parents of caries-free children had more positive beliefs and attitudes than those of children with caries [17]. In the knowledge domain, 59% of the parents replied that the mother's diet during pregnancy does have an effect on the development of the child's teeth. This suggests that a significant portion of the study population has knowledge about the relationship between the mother's health and the oral health of the unborn child.

However, 55% of the parents accepted breastfeeding of an infant before sleep. This shows that more than half of the study population does not have knowledge about the effects of feeding

before sleep. A previous study showed an increased risk for ECC with a prolonged duration of breastfeeding [18]. In another study, urban Mexican American and immigrant Latino mothers express uncertainty as to how bottle-feeding was detrimental to oral health [19,20]. The lack of knowledge about nighttime bottle feeding and oral health is alarming and is one of the most important pre-disposing factors for ECC.

Although parents had good knowledge of diet-related risk factors, half the children were bottlefed at bedtime [21]. In the present study, 44% of parents replied that they did not know about the effects of nighttime bottle-feeding on the child's teeth. This indicates that around half of the study population does not have knowledge about the relationship between nighttime bottle feeding and the development of ECC. This is in spite of the fact that 51% of the study population accepted that bottle feeding affected the child's teeth.

In this study, 48% of the parents accepted that the child required a dental checkup even if no obvious dental problems existed. Moreover, 64% of the parents denied that the child should drink milk from a cup once he/she was able to hold it. Previous research developed with the Saudi population reported that 70% agreed that pacifiers affected oral health, and 68% favored using a cup when the child was able to hold it [22]. In our study, we observed that 74% of parents rejected the frequent intake of sweetened juice by the child. This shows that the majority of parents have good knowledge about the relationship between the frequent intake of sweetened liquids and the development of tooth decay.

In this research, 46% of the parents accepted that fluoride toothpaste would be helpful in the prevention of decay. This shows that there is still a lack of awareness in the study population about the preventive effects of fluoride toothpaste. However, 83% of the parents accepted that limiting intake of candy/sugars would be helpful in the prevention of decay. This fact shows that the majority of the parents are aware that increased consumption of candies/sugars causes decay.

About brushing, 54% of the parents replied that they knew how much tooth paste should be used when brushing the child's teeth and 32% of the parents replied 'don't know'. Previous studies have shown that many parents are not clear as to whether fluoride should be used in young children and how much, if any, should be used [21,23]. The results in the knowledge domain revealed a statistically significant lack of knowledge regarding the development of ECC ($p > 0.05$).

Regarding the response rate of parents in the attitude domain, the majority of parents responded positively to many of the questions. The most significant finding in our study was the low percentage of parents that accepted the relationship between nighttime bottle/breast feeding and tooth decay (45% of parents strongly disagreed). This indicates that that majority of parents do not recognize that nighttime breast/bottle feeding is a risk factor.

Half of the parents accepted that the child's teeth should be cleaned/brushed as soon as they erupt. However, only 37% of the parents agreed that it was necessary to take their baby for a dental checkup after the teeth erupted. The majority of parents accepted that baby teeth need dental care as much as permanent teeth do. In the present study, 31% of the parents strongly disagreed with the

statement that it was not necessary to perform fillings in primary teeth. In a study conducted in Poland, two-thirds of the mothers believed that care of deciduous dentition were unnecessary [24]. In contrast, a study performed in England found that 74% of mothers thought that dental decay in primary teeth was very important, but only 47% believed that teeth with dental caries should be filled [23].

In the present study, 26% of the parents strongly disagreed that the child should visit the dentist before 1 year of age and 26% of the parents replied that they couldn't say. According to responses in this study, 31% of the parents were uncertain about dental decay being caused by bacteria transmitted via shared feeding utensils; 27% of parents strongly disagreed with this idea and only 24% of the study population accepted it. Educating parents about shared food and utensils has been proven to help prevent early colonization of oral flora in infants [1]. It was observed that the study population had a better attitude about oral health care than they did knowledge ($p < 0.05$).

The response rate regarding preventive practices for ECC revealed that the majority of the parents agreed with many of the questions. Poor health literacy is associated with poorer perceptions of health and decreased utilization of services [25]. The findings of this research show that 47% of the parents disagreed with the notion that it was advisable to have sugary snacks often. Only 36% of the parents disagreed that bacteria cause tooth decay and can be spread from mother to child; 32% of the parents replied that they were uncertain/couldn't say. Some authors reported that only 15% of respondents agreed that tooth decay was caused by bacteria that were transmitted by shared feeding utensils [26].

In the present study, 35% of parents agreed that bottle feeding after the child was 1-year-old was bad for his/her teeth; 32% of the parents replied that they were uncertain/couldn't say. In a study performed with Latino preschool children, it was observed that prolonged use of a bottle resulted in an increased risk for ECC [19]. However, only 36% of that study population agreed that fluoride toothpaste should not be given to children younger than 3 years of age and 38% replied that they were uncertain/couldn't say. In our study, the majority of parents accepted that brushing of the child's teeth should be done by the parent. It was agreed by 47% of the study population that the first sign of tooth decay was a white line or spots on the tooth surface; 30% replied that they were uncertain/couldn't say. It was observed that the study population had better preventive practices regarding oral health than they had knowledge ($p < 0.05$).

A limitation of this study was the small sample size. Further studies with larger sample sizes are required to confirm our findings. This approach to assessing knowledge, attitude, and practice can be inaccurate. When approached by a professional, parents will often say what they know to be true, rather than what they actually do in practice [27].

Conclusion

Parents did not show an adequate knowledge but did show a good attitude and practice regarding the prevention of ECC. It is possible that parents are not properly informed about the

details of oral disease and its causes. Consequently, more effort is required to improve knowledge, attitude, and preventive practices regarding ECC among parents in Al Jouf province, Kingdom of Saudi Arabia.

References

1. Drury TF, Horowitz AM, Ismail AI, Maertens MP, Rozier RG, Selwitz RH. Diagnosing and reporting early childhood caries for research purposes. A report of a workshop sponsored by the National Institute of Dental and Craniofacial Research, the Health Resources and Services Administration, and the Health Care Financing Administration. *J Public Health Dent* 1999; 59(3):192-7. doi: 10.1111/j.1752-7325.1999.tb03268.x.
2. O'Mullane D, Parnell C. Early childhood caries: A complex problem requiring a complex intervention. *Community Dent Health* 2011; 28(4):254.
3. Kim Seow W. Environmental, maternal, and child factors which contribute to early childhood caries: A unifying conceptual model. *Int J Paediatr Dent* 2012; 22(3):157-68. doi: 10.1111/j.1365-263X.2011.01186.x.
4. Harris R, Nicoll AD, Adair PM, Pine CM. Risk factors for dental caries in young children: A systematic review of the literature. *Community Dent Health* 2004; 21(1 Suppl):71-85.
5. Tinanoff N, Reisine S. Update on early childhood caries since the Surgeon General's Report. *Acad Pediatr* 2009; 9(6):396-403. doi: 10.1016/j.acap.2009.08.006.
6. Wyne AH, Aducci JO, Shalan T, Khan N. Feeding and socioeconomic characteristics of nursing caries children in a Saudi population. *Pediatr Dent* 1995; 17(7):451-4.
7. Sogi GM, Bhaskar DJ. Dental caries and oral hygiene status of school children in Davangere related to their socio-economic levels: An epidemiological study. *J Indian Soc Pedod Prev Dent* 2002; 20(4):152-7.
8. Oliveira LB, Sheiham A, Bonecker M. Exploring the association of dental caries with social factors and nutritional status in Brazilian preschool children. *Eur J Oral Sci* 2008; 116(1):37-43. doi: 10.1111/j.1600-0722.2007.00507.x.
9. Marrs JA, Trumbley S, Malik G. Early childhood caries: determining the risk factors and assessing the prevention strategies for nursing intervention. *Pediatr Nurs* 2011; 37(1):9-15.
10. Al-Hosani E, Rugg-Gunn A. Combination of low parental educational attainment and high parental income related to high caries experience in pre-school children in Abu Dhabi. *Community Dent Oral Epidemiol* 1998; 26(1):31-6. doi: 10.1111/j.1600-0528.1998.tb01921.x.
11. Figueiredo MJ, de Amorim RG, Leal SC, Mulder J, Frencken JE. Prevalence and severity of clinical consequences of untreated dentine carious lesions in children from a deprived area of Brazil. *Caries Res* 2011; 45(5):435-42. doi: 10.1159/000330531.
12. Da Silva K. A role for the family in children's oral health. *N Y State Dent J* 2007; 73(5):55-7.
13. Singh P, King T. Infant and child feeding practices and dental caries in 6 to 36 months old children in Fiji. *Pac Health Dialog* 2003; 10(1):12-6.
14. Finlayson TL, Siefert K, Ismail AI, Delva J, Sohn W. Reliability and validity of brief measures of oral health-related knowledge, fatalism, and self-efficacy in mothers of African American children. *Pediatr Dent* 2005; 27(5):422-8.
15. Abiola Adeniyi A, Eyitope Ogunbodede O, Sonny Jeboda O, Morenike Folayan O. Do maternal factors influence the dental health status of Nigerian pre-school children? *Int J Paediatr Dent* 2009; 19(6):448-54. doi: 10.1111/j.1365-263X.2009.01019.x.
16. Wigen TI, Espelid I, Skaare AB, Wang NJ. Family characteristics and caries experience in preschool children. A longitudinal study from pregnancy to 5 years of age. *Community Dent Oral Epidemiol* 2011; 39(4):311-7. doi: 10.1111/j.1600-0528.2010.00596.x.
17. Skaret E, Espelid I, Skeie MS, Haugejorden O. Parental beliefs and attitudes towards child caries prevention: assessing consistency and validity in a longitudinal design. *BMC Oral Health* 2008; 8:1. doi: 10.1186/1472-6831-8-1.
18. van Palenstein Helderman WH, Soe W, van 't Hof MA. Risk factors of early childhood caries in a Southeast Asian population. *J Dent Res* 2006; 85(1):85-8. doi: 10.1177/154405910608500115.
19. Hoeft KS, Barker JC, Masterson EE. Urban Mexican-American mothers' beliefs about caries etiology in children. *Community Dent Oral Epidemiol* 2010; 38(3):244-55. doi: 10.1111/j.1600-0528.2009.00528.x.

20. Horton S, Barker JC. Rural Latino immigrant caregivers' conceptions of their children's oral disease. *J Public Health Dent* 2008; 68(1):22-9. doi: 10.1111/j.1752-7325.2007.00078.x.
21. Gussy MG, Waters EB, Riggs EM, Lo SK, Kilpatrick NM. Parental knowledge, beliefs and behaviours for oral health of toddlers residing in rural Victoria. *Aust Dent J* 2008; 53(1):52-60. doi: 10.1111/j.1834-7819.2007.00010.x.
22. Togoo RA, Zakirulla M, Yaseen SM, Nasim VS, Al Qahtani AR, Al-Turki AA. Cross-sectional study of awareness and knowledge of causative factors for early childhood caries among Saudi parents: A step towards prevention. *Int J Health Sci Res* 2012; 2(3):1-7.
23. Blinkhorn AS, Wainwright-Stringer YM, Holloway PJ. Dental health knowledge and attitudes of regularly attending mothers of high-risk, pre-school children. *Int Dent J* 2001; 51(6):435-8. doi: 10.1002/j.1875-595X.2001.tb00856.x.
24. Szatko F, Wierzbicka M, Dybizbanska E, Struzycka I, Iwanicka-Frankowska E. Oral health of Polish three-year-olds and mothers' oral health-related knowledge. *Community Dent Health* 2004; 21(2):175-80.
25. Jackson R. Parental health literacy and children's dental health: Implications for the future. *Pediatr Dent* 2006; 28(1):72-5.
26. Mani SA, Aziz AA, John J, Ismail NM. Knowledge, attitude and practice of oral health promoting factors among caretakers of children attending day-care centers in Kubang Kerian, Malaysia: A preliminary study. *J Indian Soc Pedod Prev Dent* 2010; 28(2):78-83. doi: 10.4103/0970-4388.66741.
27. Hawley G, Holloway P. Measuring health behaviours - which tools should we use? *Community Dent Health* 1994; 11(3):129-30.